

WHAT IS CLAIMED IS:

1. A semiconductor device comprising:

a semiconductor substrate provided with a desirable element region;

5 an electrode pad formed to come in contact with a surface of the semiconductor substrate or a wiring layer provided on the surface of the semiconductor substrate;

a bonding pad formed on a surface of the electrode pad through an intermediate layer; and

10 a resin insulating film for covering a peripheral edge of the bonding pad such that an interface of the bonding pad and the intermediate layer is not exposed to a side wall.

2. The semiconductor device according to claim 1, wherein the  
15 resin insulating film is a polyimide resin film.

3. The semiconductor device according to claim 1, wherein the resin insulating film is formed to cover edges of the bonding pad and the intermediate layer.

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4. The semiconductor device according to any of claims 1 to 3, wherein the intermediate layer includes a titanium tungsten (TiW) layer.

5. The semiconductor device according to any of claims 1 to 3,  
25 wherein the bonding pad is formed of metal.

6. The semiconductor device according to any of claims 1 to 3,  
wherein the electrode pad is formed by a metal film containing aluminum.

5 7. The semiconductor device according to any of claims 1 to 3,  
wherein the electrode pad is a thin copper film.

8. A semiconductor device comprising:  
a semiconductor substrate provided with a desirable element region;  
10 a first electrode pad formed to come in contact with a surface of the  
semiconductor substrate or a wiring layer provided on the surface of the  
semiconductor substrate;  
a bonding pad formed on a surface of the first electrode pad;  
a bump formed through an intermediate layer on a surface of a  
15 second electrode pad provided on the semiconductor substrate; and  
a resin insulating film formed in at least a peripheral portion of the  
bump and a peripheral portion of the bonding pad to cover a peripheral edge  
of the bonding pad such that an interface of the bonding pad and the first  
electrode pad is not exposed to a side wall, and  
20 to cover an interface of the bump and the intermediate layer which is  
exposed to a side surface of the bump.

9. A method of manufacturing a semiconductor device comprising  
the steps of:  
25 forming an electrode pad to come in contact with a surface of a

semiconductor substrate provided with a desirable element region or a wiring layer provided on the surface of the semiconductor substrate;

forming an intermediate layer on a surface of the electrode pad;

forming a pad layer to be a bonding pad on a surface of the intermediate layer and patterning the intermediate layer and the pad layer;  
5 and

forming a resin insulating film to cover edges of patterns of the bonding pad and the intermediate layer.

10 10. The method of manufacturing a semiconductor device according to claim 9, wherein the step of forming a resin insulating film includes a step of applying a polyimide resin film.

11. The method of manufacturing a semiconductor device  
15 according to claim 9 or 10, wherein the step of forming an intermediate layer includes a step of forming a titanium tungsten (TiW) layer by a sputtering method.

12. The method of manufacturing a semiconductor device  
20 according to claim 11, wherein the step of forming a pad layer includes a step of forming a metal layer by sputtering.